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EXAMINER

SAVAGE, MATTHEW O

ART UNIT PAPER NUMBER

1724

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Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/555,140  
Filing Date: August 03, 2000  
Appellant(s): KLEIN ET AL.

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Song Zhu  
For Appellant

**EXAMINER'S ANSWER**

**MAILED**  
OCT 18 2005  
**GROUP 1700**

This is in response to the appeal brief filed 8-8-05 appealing from the Office action  
mailed 10-15-04.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

Appellant's brief presents arguments relating to an objection to the specification for failing to provide proper antecedent basis for the claimed subject matter. This issue relates to petitionable subject matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201.

**(7) Claims Appendix**

A substantially correct copy of appealed claims 13, 15-22, 35, and 36 appears on pages i-ii of the Appendix to the appellant's brief. The minor errors are as follows: the

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application number at the top of each page of the claims appendix should be --  
09/555,140--.

### **(8) Evidence Relied Upon**

US 4,976,858	Kadoya	12-1990
US 4910064	Sabee	3-1990
JP 6-198108	Togashi	7-1994
EP 338,479	Klimmek et al	10-1989

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 36 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The limitation of the discharge layer having a weight per unit area of "at least about 50 g/m<sup>2</sup>" recited in claim 36 includes values above 200 g/m<sup>2</sup> and is considered

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new matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13, 15-22, 35, and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 13 and 35, it is unclear as to what range "about" implies.

Concerning claim 36, it is unclear as to what range "least about" implies.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13, 15-17, 21, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadoya in view of Sabee or Togashi et al.

With respect to claims 13, 35, and 36, Kadoya discloses a filter element (see FIGS. 1-6) having a plurality of layers 5, 2 joined together (e.g., by thermal fusing, see lines 1-4 of col. 3), the successive layers in the flow direction exhibiting an increasing degree of separation and a decreasing degree of storage capacity (e.g., with respect to larger diameter particles, see lines 5-38 of col. 3), the inflow layer 5 being comprised of

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synthetic fibers of a non-woven web (e.g., rayon and polyester, see lines 67-68 of col. 2) and the discharge layer 2 being comprised of a predominantly cellulose containing filter paper (e.g., linter and pulp, see lines 65-66 of col. 2), the filter paper layer being considered "compressed" since it has a higher density than that of the other layers and/or because paper is made by a compression process, the layers having surface weights that lie within applicant's claimed range (see the thickness values and density values disclosed in col. 3 lines 5-14, and lines 45-64). Kadoya fails to specify the non-woven web as being "melt-blown" with a fiber diameter of about 2 microns or less. Sabee discloses an analogous non woven fabric (e.g., composed of rayon and polyester, see lines 25-65 of col. 7) formed by a melt blowing process (see lines 14-63 of col. 6) having a fiber diameter of 2 microns or less (see line 11 of col. 15) and suggests that such a fabric has a uniform porosity and is suitable for use as a filter medium (see from line 55 of col. 5 to line 14 of col. 6). It would have been obvious to have modified the filter of Kadoya so as to have included a melt-blown non woven web as suggested by Sabee in order to provide a web having a uniform porosity. Alternately, as best understood, Togashi et al disclose the concept of using an inflow layer formed of a melt blown non woven web positioned upstream of a discharge layer formed of a finer filter medium and suggests that such an arrangement increases the dust holding capacity of the filter. It would have been obvious to have modified the filter of Kadoya so as to have included an inflow layer formed of a melt blown non woven web as suggested by Togashi et al in order to improve the dust holding capacity of the filter.

As to claim 15, Kadoya discloses at least three medium layers joined together as

recited in the claim (see FIGS. 3-6).

Regarding claim 16, Kadoya discloses an intermediate medium layer 5b (see FIGS. 3-6) that is considered compressed with respect to the inflow side layer 5a since it has a higher density than that of the inflow side layer 5a (see lines 56-57 of col. 3), and Sabee discloses a melt blow non-woven web.

Concerning claim 17, Kadoya discloses a star folded filter element (see FIG. 7).

Regarding claim 21, Kadoya discloses a cellulose containing filter layer including up to but not including 50% synthetic fibers (e.g., 15% rayon fibers, see lines 65-68 of col. 2).

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kadoya in view of Sabee or Tagashi et al as applied to claim 13 above, and further in view of applicant's admission on lines 17-33 of page 10 of the appeal brief filed on 11-22-02.

Kadoya discloses the filter medium as being folded to form pleats as recited in claim 11 (see FIGS. 7-9). Kadoya, Sabee, and Tagashi et al fail to disclose the layers of filter medium as being welded together by ultrasound as recited in claim 18, the layers of filter media being joined together by surface pressure by a folding process as recited in claim 19, or the layers of filter media as being adhesively bonded together by gluing with a powdered adhesive or with a hot melt impregnating agent as recited in claim 20, however, applicant admits that such arrangements are well known in the art on lines 17-33 of page 10 of the appeal brief filed on 11-22-02. Accordingly, it would have been

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obvious to have modified the filter suggested by Kadoya and Sabee so as to have included the well known bonding arrangements recited in claims 18-20 in order to facilitate construction of the filter utilizing joining techniques that were well known in the

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kadoya in view of Sabee or Togashi et al as applied to claim 21 above, and further in view of EP 338,479 to Klimmek et al.

Kadoya, Sebee, and Togashi et al fail to specify the cellulose containing filter layer as including glass fibers, Klimmek et al disclose an analogous filter that includes a filter paper support layer including glass fibers and suggests that the fibers increase the strength of the filter paper layer. It would have been obvious to have modified the cellulose containing layer suggested by Kadoya so as to have included glass fibers as suggested by Klimmek et al order to increase the strength of the paper layer.

#### **(10) Response to Argument**

##### Response to applicant's arguments against the objection to the specification.

Applicant's arguments against the objection to the specification as failing to provide proper antecedent basis for the claimed subject matter will not be responded to since the associated issue is not an appealable issue and because the objection was obviated by the after-final amendment filed on 8-8-05 of which has been entered.



Response to applicant's arguments against the rejection under 35 U.S.C. 112,  
first paragraph of claim 36.

Applicant argues that the examiner has not met the burden to establish the evidence that "a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims" as set forth in In re Wertheim. Applicant argues that the open-ended range has basis in various passages found on pages 2-6 of the instant specification. Only two of the cited passages (one on lines 17-23 of page 4 and the other on lines 15-20 of page 6) relate to a surface weight range of the filter paper layer in the case of the elected species, the broadest range being "approximately 50 to 200 g/m<sup>2</sup>". The aforementioned passages do not include the phrase "preferred embodiments" as argued by applicant and constitute the only disclosure of surface weight ranges with respect to the elected species in the instant specification. None of the weight ranges for the filter paper layer recited in the original specification and claims are open-ended. Accordingly, one skilled in the art would clearly recognize that the open-ended range of "at least about 50 g/m<sup>2</sup>" was new matter since such a range includes values extending outside the upper limit of "approximately 50 to 200 g/m<sup>2</sup>", the later of which constitutes the broadest range of surface weights for the filter paper layer taught in the original disclosure. Applicant is further directed to M.P.E.P. 2163.05 III citing In re Wertheim in which a claim reciting "at least 35%" failed to meet the written description requirement when a range of "25%-60%" had been disclosed in the specification.

Response to applicant's argument against the rejection under 35 U.S.C. 112, second paragraph of claims 13, 15-22, 35, and 36.

Applicant argues that the range implied by "about" in claims 13 and 35 and "at least about" in claim 36 are definite in view of M.P.E.P. 2173.05(b) and Amgen, however, it is held that the aforementioned terms are indefinite in accordance with the cited M.P.E.P. section since there is close prior art as evidenced by the pending rejections under 35 U.S.C. 103 and because the instant specification and prior art fail to disclose the ranges implied by the terms "about" and "at least about".

Response to applicant's arguments against the rejection of claims 13, 35, and 36 under 35 U.S.C. 103 over Kadoya in view of Sabee or Togashi et al.

Applicant argues that Kadoya fails to disclose filter layers having a decreasing storage capacity in the direction of flow, however, it is held that the filter of Kadoya includes filter layers having a decreasing storage capacity with respect to large particles since the lower density inflow layer (e.g., layer 5 shown in FIGS. 1-2, and layers 5a and 5b shown in FIGS. 3 and 4) is capable of capturing large particles whereas the high density paper discharge layer (e.g., layer 2) can only capture smaller particles (see FIGS. 2 and 4, lines 23-31 of col. 3, and lines 8-26 of col. 4). It is noted further that since the net-like non-woven layer 5 in FIGS. 1-4 has a larger thickness and lower density than the dense paper layer 2, that the layer 5 has a larger void volume and is inherently capable of storing a larger quantity of both large and small particles than the

layer 2 as evidenced by formation of a dust layer (see FIGS. 2 and 4, on lines 26-29 of col. 3, and lines 11-16 of col. 4).

Applicant's argument that Kadoya teaches the formation of a dust layer to aid in filtering small particles and to prevent embedding of small particles in the dense filter paper layer is noted, however, applicant's invention is disclosed to function in a similar manner (see lines 4-6 of page 4). Accordingly, the formation of a dust layer within the inflow layer 5 of the Kadoya filter can be equated with a decreasing storage capacity as claimed by applicant since Kadoya fails to specify the formation of a dust layer within the paper layer 2.

Applicant argues that examiner's opinion of the inflow layer 5 (of the Kadoya filter) as having a higher capacity to collect large particles is irrelevant and incorrect since the claims do not specify "a decreasing storage capacity for large particles", however, such a conclusion is not agreed with since the claims fail to specify any particular size range for the particles being filtered. In addition, the inflow layer 5 of Kadoya is not limited to the capture of only large particles since it can capture small particles within a dust layer as explained above.

Applicant argues that the examiner's holding of the inflow layer 5 (of Kadoya) as having a higher capacity for collecting large particles is incorrect since the discharge layer could possible have a higher capacity for collecting large particles, however, such a condition is impossible since the large particles could not penetrate the pores of the discharge/dense paper layer 2 since the pores of the discharge layer are smaller than the large particles.

Applicant argues that the examiner's opinion that the inflow layer 5 (of Kadoya) has a larger storage capacity than the discharge layer since the layer has a lower density, larger thickness, and larger pore is incorrect since the layer 5 could possibly have a smaller void space than the layer 2, however, such a holding is not agreed with since the Kadoya reference clearly implies that the layer 5 has a larger void space than that of the layer 2 as evidenced by the formation of the dust layer composed of both large and small particles within the net-like non-woven layer 5 (see FIGS. 2 and 4, lines 23-27 of col. 3, and lines 8-12 of col. 4) and the discharge layer only capturing small particles escaping the dust layer (see lines 29-31 of col. 4 and lines 13-16 of col. 4).

Applicant argues that FIG. 1 embodiment of Kadoya discloses a surface weight range of 180-300 g/cm<sup>2</sup> and therefor fails to disclose the density range of 15-150 g/cm<sup>2</sup> for the inflow layer 5 as required by the claims, however, such a conclusion is not correct since the lower end point of 180 g/cm<sup>2</sup> disclosed by Kadoya could be encompassed by the recited range of "about" 150 g/cm<sup>2</sup> since the tolerance of "about" has not been defined in the closest prior art or the instant specification. It is further noted that Togashi teaches a surface weight of 40 g/cm<sup>2</sup> for a melt blown non-woven inflow layer of a composite filter sheet of which falls within applicant's claimed range (see paragraph 18 of the English machine translation, a full English translation of which will be provided at a later date). Accordingly, one skilled in the art would have modified the FIG. 1 embodiment of Kadoya so as to have included the melt-blown non-woven inflow layer having a surface weight of 40 g/cm<sup>2</sup> as suggested by Togashi in order to provide the required amount of storage capacity for dust in a specific application.

Applicant's argument that the drawings cannot be relied upon in order to determine the thickness of the layers 5a and 5b of the embodiment shown in FIGS. 3-4 of Kadoya is noted, however, it is held that modifying the layers so as to have been of equal thickness as suggested in the drawings, thus resulting in a surface weight ranges for each layer that fall within applicant's claimed range (e.g., 60-120 g/m<sup>2</sup> for the layer 5a and 90-150 g/m<sup>2</sup> for layer 5b) would have been obvious in order optimize the holding capacity/depth of the dust layer of each layer with respect to the size distribution of the particles to be filtered in the case that the relative quantities of large and intermediate size particles was about the same. Finally, it is noted that, at the lower end of the density ranges for layer 5a (e.g., .1 g/cm<sup>3</sup>, see lines 56-60 of col. 3), that the surface weight of layer 5a would be within applicant's claimed range as the thickness of the layer 5a approached the thickness of both layers (e.g., 1.2 mm see lines 47-49 of col. 3).

Response to applicant's arguments against the rejection of claim 15 under 35 U.S.C. 103 over Kadoya in view of Sabee or Togashi et al.

Applicant argues that Kadoya fails to specify two non-woven filter layers that having a decreasing storage capacity for the particles to be filtered, however, it is held that the embodiment shown in FIGS. 2-3 of Kadoya discloses such a configuration since the layers 5a and 5b have decreasing porosities, increasing densities, are formed from the same type of non-woven net-like material, and could be configured to have the same thickness for the reason set forth above.

Response to applicant's arguments against the rejection of claim 16 under 35 U.S.C. 103 over Kadoya in view of Sabee or Togashi et al.

Applicant's argument that Kadoya fails to explicitly disclose the intermediate layer as being "compressed"/formed by a compression process is noted, however, such a limitation relates to a method of making a filter layer and carries no patentable weight since applicant has not shown that such a process step would result in a filter layer that was materially different from that disclosed by Kadoya. In the instant case, the layer 5b of Kadoya is considered "compressed" since it has a higher density than that of the upstream layer 5a. Applicant argues that Kadoya fails to disclose an intermediate filter layer having a surface weight of 15-150 g/cm<sup>2</sup>, however, such a limitation is considered obvious in view of the FIG. 3-4 embodiment of Kadoya in the case that the thicknesses of the layers 5a and 5b were equal as suggested in the drawings, or if the thickness of layer 5a approached the total thickness of both layers.

Response to applicant's argument against the rejection under 35 U.S.C. 103 over Kadoya in view of Sabee or Togashi et al and applicant's admission.

Applicant argues that the rejection of claims 18-20 under 35 U.S.C. 103 over Kadoya, in view of Sabee or Togashi et al and applicant's admission is improper since the rejection of claim 13 from which claims 18-20 depend is improper, however, the rejection is being maintained since the rejection of claim 13 is considered to be proper for the reasons set forth above.

Response to applicant's argument against the rejection under 35 U.S.C. 103 over  
Kadoya in view of Sabee or Togashi et al and Klimmek et al.

Applicant argues that the rejection of claim 22 under 35 U.S.C. 103 over Kadoya in view of Sabee or Togashi et al and Klimmek et al is improper since the rejection of claim 13 from which claims 18-20 depend is improper, however, the rejection is being maintained since the rejection of claim 13 is proper for the reasons set forth above. A complete English translation of the Klemmek et al reference will be provided at a later date.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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